



Knowledge Access for Rural Interconnected Areas Network (KariaNet)

SYNTHESIS of the NATIONAL KNOWLEDGE MAPPING STUDIES



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Executive Summary

This report synthesizes and compares the “knowledge mapping studies” prepared for nine out of ten countries participating in KariaNet. All studies agree that information management and extension are the two pillars for KM/KS in the region, and point at the lack of expertise in KM/KS and under-qualified / under-staffed extension service centers at the country level. However, the interest in KM/KS is increasing and hence coherence in agriculture information management and dissemination at the national level is strongly required.

Going through the various reports, it becomes an empirical certainty that there is a marked shift in agricultural policies from the food self-sufficiency paradigm that dictated the policies of the 80’s and the early 90’s to the wider and more inclusive paradigm of food security from the year 2000 onwards. There are also tangible proofs that governments are trying to approach agricultural policy from a broader sustainable natural resources management angle as issues such as water governance, energy efficiency and climate change are becoming more and more mainstreamed in the decision maker’s discourse.

It is also clearly appears that social and economic stability is becoming instrumental within the evolving geo-political context in MENA. Although there is no evidence of a substantive revision of the agricultural policies from 2011 onwards, there is at least a sense of accelerated reform and a new emerging talk about “equity” and the “professionalization” of agriculture which remains by and large a “default” choice to the poorest and the most marginalized.

Most studies also point to a gradual disengagement from state-controlled agricultural policies towards more “democratic” decision making structures, particularly in some Maghreb countries where participatory platforms such as “inter-professional bodies” and value chain approaches for key economic sectors are being put in place.

However, and from an end-user perspective, a lot remains to be done, particularly in overcoming the assumption that “farmers” are a homogenous group and that equal opportunities are available for farmers from both sexes. It is that very assumption that also affects KM/KS in determining what information is needed and how the message is conveyed from a use/user perspective.

There is also a lack of critical review of past experiences and “learning from failure” in the studies of all countries without exception, which show a tendency to over-simplify the endemic problems of the agricultural sector into the lack of an adequate organizational structure for the research and extension services.

According to the reports, the government remains the primary stakeholder in KM/KS with the notable exception of Lebanon and Palestine where the weakness of the central governments led to the emergence of a relatively strong NGO/private sector presence

Recommendations on improving KM/KS in the participant countries were suggested and can be clustered into 8 key areas:

- i) ***Developing national strategies for KM/KS:*** taking into consideration the omnipresent role of the state, it is very important to advocate for a clear KM/KS strategy that should be a transversal cross-cutting theme to all planned reforms
- ii) ***Investing in champions:*** advocacy for KM/KS and the operationalization of any KM/KS strategy would need skilled local champions. While KariaNet can distill the message regionally, only local champions can move things at the country level and hence strengthen the broader regional momentum
- iii) ***Addressing the segmentation between research and extension by making it use/user driven:*** This would entail that both the R&D sector and the extension sector will have to move beyond their “comfort zone” and embrace the multiple views of the users and develop out-of-the-box solutions that can be used (and not just published and archived)
- iv) ***Addressing the fragmentation of knowledge sources,*** mainly by creating national repositories (such as agriculture observatories) that can have unrestricted access to all data pertinent to agriculture (departments of statistics, other ministries such as water and irrigation, social affairs, environment, data produced by international cooperation projects etc...)
- v) ***Mainstreaming agricultural KM/KS with emerging priorities*** that are organically related to agriculture such as climate change, food security, environmental conservation and natural resources management.
- vi) ***Involving farmers across the entire KM/KS chain*** by acknowledging their role not only as consumers but also as producers of knowledge.
- vii) ***Avoiding the fixation on only one category of media*** (mainly social media and ICT) as the use/users should determine what type of media should be used to convey the message.
- viii) ***Acknowledging diversity within farmer groups*** (women farmers, landless farmers, subsistence farmers, young farmers) and ensuring that any KM/KS strategy ensures equity vis-à-vis these groups.

The role of KariaNet as the only regional network for the management and sharing of knowledge in agriculture and rural development is endorsed by the nine studies, but the role of KariaNet is only complementary to national KM/KS strategies when they exist. It is also very important to catalyze the emergence of KM/KS strategies in countries where the concept is totally absent (Sudan and Yemen). Moreover, it would be vital to share and learn from each other's' experience in failure and success in order to improve or put in place KM/KS structures and the studies point to a substantive body of knowledge that can be used as a starting point for the process. Finally, a positive national involvement combining all stakeholders would play a major role in achieving the main objectives of KariaNet.

ملخص تنفيذي

يوجز هذا التقرير ويؤلف ويُقارن "دراسات خرائط المعرفة" المُعدّة لتسعة من أصل البلدان العشرة المشاركة في برنامج "قرية نت" (KariaNet). بشكل عام، تشير جميع الدراسات إلى أن منظومة التحكم بدورة المعلومات والإرشاد الزراعي هما الدعامتان الأساسيتان لإدارة المعرفة وتقاسمها على المستوى الوطني، كما تشير إلى النقص في الخبرات البشرية المتخصصة في إدارة المعرفة وتقاسمها إضافة إلى المشاكل المزمنة التي تعاني منها خدمات الإرشاد سواءً من ناحية التأهيل أو من ناحية الموارد البشرية. ومع ذلك، يزداد الإهتمام بإدارة المعرفة/تقاسمها وبالتالي فإن التماسك أو التنسيق في إدارة المعلومات الزراعية ونشرها على المستوى الوطني مطلوب بقوة.

ويبرز لدى تحليل التقارير الوطنية التغير اللافت في مقاربة السياسات الزراعية، وتحولها التدريجي من النموذج المعياري (باراديم) للإكتفاء الغذائي الذاتي الذي أُملى سياسات ثمانينات ومطلع تسعينات القرن الماضي إلى النموذج المعياري الأعم والأشمل المرتكز على الأمن الغذائي بأبعاده الإقتصادية والإجتماعية والبيئة المتداخلة من العام 2000 فصعوداً. واللافت أيضاً في التقارير المسعى المتجدد للحكومات لمقاربة السياسات الزراعية من زاوية الإدارة المستدامة للموارد الطبيعية، ومحاولة تشبيك السياسة الزراعية مع أولويات أخرى مرتبطة مثل الإرشاد المائي، وكفاية الطاقة، والتغير المناخي.

ويبدو من الواضح أيضاً أن الإستقرار الإجتماعي والإقتصادي قد أصبح في أعلى سلم أولويات صنّاع القرار ضمن السياق الجيوبوليتيكي الناشئ في منطقة الشرق الأوسط وشمال إفريقيا. وعلى الرغم من عدم وجود دلائل موثقة على إجراء مراجعة جوهرية للسياسات الزراعية من 2011 فصعوداً، هناك على الأقل حسٌ بضرورة الإسراع في الإصلاحات وحديث جديد ناشئ حول "الإنصاف" و"إضفاء الصفة الإحترافية" على الزراعة التي تبقى في العموم الملاذ الوحيد المتوافر لأولئك الذين هم أكثر فقراً وتهميشاً. وتشير معظم الدراسات أيضاً إلى تخلُّ تدريجي عن السياسات الزراعية الموجهة من الدولة لصالح هيكلية صنع قرار أكثر "ديموقراطية"، لا سيّما في بعض دول المغرب العربي حيث يجري إرساء منصات تشاركية على غرار "الهيئات المهنية الجامعة" ومقاربات المرتكزة على "سلسلة القيمة (المضافة) لقطاعات اقتصادية أساسية.

ومع ذلك، ومن وجهة نظر مستخدم نهائي، هناك الكثير مما لا يزال يتوجب إنجازه، خصوصاً من ناحية تخطّي الفرضيّة بأنّ "المزارعين" هم مجموعة متجانسة وأنّ ثمة فرصاً متساوية متوافرة للمزارعين من الجنسين. إنّما ذلك الافتراض بحد ذاته هو الذي يؤثر أيضاً على إدارة المعرفة/تقاسمها من خلال تحديده أيّ معلومات هي المطلوبة وكيف سيتم إيصال الرسالة وإستخدام المعلومات والمستخدمين النهائيين لها وهناك نقصاً أيضاً في المقاربة النقدية للتجارب الماضية و"التعلّم من الفشل" في دراسات جميع البلدان من دون استثناء، والميل إلى الإفراط في تبسيط المشكلات المزمنة للقطاع الزراعي وعزوها فقط إلى الإفتقار لهيكلية تنظيمية وافية لخدمات الأبحاث والإرشاد. ووفقاً للتقارير، تبقى الحكومات الجهات النافذة الأساسية في هذا الحقل، ما عدا الإستثناء اللافت المتمثّل في لبنان وفلسطين حيث أدّى ضعف الحكومة المركزية إلى إرساء الحضور القوي نسبياً للمنظّمات غير الحكومية/القطاع الخاص. واقتُرحت 8 توصيات حول سُبل تحسين إدارة المعرفة/تقاسمها في الدول المشاركة:

- i. **تطوير استراتيجيات وطنية لإدارة المعرفة/تقاسمها:** خاصة أن الدولة تبقى الطرف الأساسي والأكثر تأثيراً على القطاع الزراعي بشكل عام، وعلى أن تكون إدارة المعرفة وتقاسمها محوراً أساسياً وقاسماً مشتركاً لجميع الإصلاحات المخطّط لها.
- ii. **الإستثمار في المُنَاصرين:** الدعوة إلى إدارة المعرفة/تقاسمها والتفعيل العملي لأيّ استراتيجية إدارة المعرفة/تقاسمها قد تحتاج إلى مُنَاصرين محليين مهرة. وفيما بإمكان برنامج "قرية نت" أن يحرك الأمور على الصعيد الإقليمي، وحدهم المُنَاصرون المحليون يمكنهم دفع الأمور على مستوى البلد في الإتجاه المطلوب وبالتالي تضافر الجهود على المستوى الإقليمي.
- iii. **إعادة النظر في إستراتيجيات البحث العلمي والإرشاد وجعلها أكثر مؤامّة للإستخدام/المُستخدِم:** يتضمّن ذلك تحرك قطاع الأبحاث والتطوير وقطاع الإرشاد خارج حدوده "المريحة" (ونعني بها تجنب إعادة إنتاج نفس المواضيع مع تعليبها بأشكال مختلفة) وتطوير حلول جديدة مبتكرة بالوسع استخدامها على أرض الواقع وليس نشرها وأرشفتها فحسب

iv. **مواجهة تجزئة مصادر المعرفة**، لا سيّما عبر استحداث مراكز وطنية جامعة (على غرار المراصد الزراعية) يمكنها الوصول من دون عائق إلى جميع البيانات المتعلقة بالزراعة (دوائر الإحصاء، وزارات أخرى مثل وزارة المياه والري، ووزارة الشؤون الاجتماعية، ووزارة البيئة، وبيانات صادرة عن مشاريع تعاون دولي، إلخ...).

v. **توجيه إدارة المعرفة الزراعية/تقاسمها تماشياً مع الأولويات الجديدة الناشئة** والتي هي على تماس مباشر مع الزراعة على غرار التغيّر المناخي، والأمن الغذائي، والحفاظ على البيئة، وإدارة الموارد الطبيعية.

vi. **إشراك المزارعين في كامل سلسلة إدارة المعرفة/تقاسمها** عبر الاعتراف بدورهم ليس كمستهلكين فحسب للمعرفة بل أيضاً كمُنتجين لها.

vii. **تجنيب التركيز على فئة واحدة من وسائل التواصل فحسب** (خصوصاً وسائل التواصل الاجتماعية وتكنولوجيات المعلومات والاتصالات) إذ إنّ مبدأ الاستخدام/المستخدمين وجب أن يُحدّد أيّ نوع من وسائل التواصل يتعيّن استخدامها لإيصال الرسالة.

viii. **تنوّع المعرفة ضمن مجموعات المزارعين** (نسوة مزارعات، مزارعون من غير مالكي الأراضي، مزارعون عند درجة الكفاف، مزارعون شبّان) والحرص على أن تضمن أيّ استراتيجية لإدارة المعرفة/تقاسمها التواصل الوثيق مع هذه المجموعات.

وتصادق الدراسات التسع على دور "قرية نت" بصفتها الشبكة الإقليمية الوحيدة لإدارة وتقاسم المعرفة في مجال الزراعة والتنمية الريفية، إلا أنّ دور "قرية نت" هو مُكمّل فحسب لإستراتيجيات إدارة المعرفة/تقاسمها على المستوى الوطني إذا ما وجدت، كما أنّها مهمة جداً في تحفيز نشوء استراتيجيات إدارة المعرفة/تقاسمها في البلدان التي يغيب عنها هذا المفهوم مثل السودان واليمن. وعلاوة على ذلك، قد يكون من الضروري تقاسم تجارب الآخرين في النجاح كما في الفشل، والتعلّم منها بغية تحسين هيكليات إدارة المعرفة/تقاسمها أو إرسائها. والجدير ذكره أن الدراسات الوطنية التي يركز عليها هذا التقرير تشير إلى جسم معرفي جوهري وخبرات خاصّة بالمنطقة يمكن استخدامها كنقطة بداية لهذه العملية. وأخيراً، يمكن لانخراطٍ وطني إيجابي يجمع معاً الهيئات النافذة كافة أن يلعب دوراً رئيسياً في تحقيق الأهداف الأساسية لـ "قرية نت".

Sommaire exécutif

Ce rapport synthétise et compare les « cartographies de connaissances » préparées pour neuf des 10 pays participants à KariaNet. Les cartographies démontrent que la vulgarisation et la gestion du flux d'informations et de connaissances sont les 2 piliers sur lesquels repose la pratique actuelle de la gestion des connaissances agricoles, et pointent par ailleurs le manque d'expertise « indigène » spécialisée dans le domaine de la gestion des connaissances ainsi qu'aux problèmes endémiques de la vulgarisation qui sont la plupart du temps sous-qualifiés et à court de personnel au niveau du pays. Toutefois, les cartographies notent une prise de conscience et une montée en puissance de l'intérêt porté à la gestion et le partage des connaissances au niveau national et régional d'où la pertinence de l'approche prônée par KariaNet.

Une lecture attentive des différents rapports révèle une certitude empirique sur la mutation en cours du paradigme de l'autosuffisance alimentaire qui semble avoir conditionné les politiques agricoles dans les années 80 et le début des années 90, vers un paradigme plus inclusif centré sur la sécurité alimentaire à partir de 2000 jusqu'à nos jours. Les rapports soulignent de même la volonté des gouvernements d'aborder les politiques agricoles sous un angle plus large qui englobe la gestion durable des ressources naturelles comme – par exemple – les problématiques liées à la gouvernance de l'eau, à l'efficacité énergétique ou encore le changement climatique qui deviennent de plus en plus intégrés dans le discours des décideurs.

La stabilité sociale et économique apparaît aussi comme une priorité, surtout en face de l'évolution récente du contexte géopolitique dans la région MENA. A défaut de preuves tangibles sur une révision en profondeur des politiques agricoles au niveau des pays dès 2011, les cartographies notent néanmoins une accélération dans la mise en œuvre de réformes, et un discours naissant sur « l'équité » et la « professionnalisation » de l'agriculture qui reste en général le choix de dernier recours pour les plus pauvres et les plus marginalisés du monde Arabe.

La plupart des études indiquent aussi un désengagement progressif des politiques d'agriculture contrôlées par l'Etat vers des structures décisionnelles plus « démocratiques », en particulier dans les pays du Maghreb où des plateformes participatives telles les « regroupements interprofessionnels » et les approches « filière » sont mise en place pour certains secteurs économiques clés.

Toutefois, et du point de vue des utilisateurs finaux, il reste encore beaucoup à faire, particulièrement pour surmonter la supposition que les « agriculteurs » sont un groupe homogène et que les opportunités pour les deux sexes sont à égalité. C'est cette supposition même qui semble affecter l'ensemble du processus de la gestion des connaissances en déterminant quelle information est la plus nécessaire et comment le message doit être transmis de la perspective de l'utilisation/ utilisateur.

La révision critique des expériences passées et la dimension « apprentissage des échecs » n'apparaît pas clairement malgré son importance, ce qui laisse penser que les problèmes endémiques du secteur agricole sont seulement et simplement dus aux défauts de la structure organisationnelle régissant les services de recherche et les services de vulgarisation.

Les cartographies soulignent par ailleurs que les gouvernements sont jusqu'à nos jours les intervenants principaux dans la gestion des connaissances agricoles, à l'exception du Liban et de la Palestine où la faiblesse de l'administration centrale aurait conduit à l'émergence d'ONG relativement influentes et à une présence marquée du secteur privé. Les recommandations proposées afin d'améliorer la gestion des connaissances dans les pays participants peuvent être classées en 8 recommandations principales :

- i) **Développer des stratégies nationales pour la gestion des connaissances** et qui prennent en considération le rôle omniprésent de l'Etat ; il est très important de mettre en avant et de défendre la nécessité d'une stratégie claire de la gestion des connaissances qui doit être un thème transversal à toutes les réformes prévues.
- ii) **Investir dans des « champions »** surtout que l'articulation et la mise en œuvre de toute stratégie au niveau national nécessite une masse critique de « champions » locaux. KariaNet reste avant tout un cadre de concertation régional et prend plus de poids et de légitimité à travers son encrage au niveau local
- iii) **Minimiser la segmentation entre recherche et vulgarisation** en les axant sur les utilisateurs et l'utilisation : ceci signifie que le secteur recherche et développement ainsi que le secteur de la vulgarisation doivent aller au-delà de leur « zone de confort » et répondre d'avantage aux besoins réels des utilisateurs afin de générer des solutions créatives et qui peuvent être mises en application (et non seulement publiées et archivées)
- iv) **Adresser la fragmentation des sources de connaissances** : Surtout en créant un archive national (comme des observatoires agricoles) avec accès illimité à toutes les données concernant l'agriculture (les départements de statistique, les autres ministères telles l'eau et l'irrigation, des affaires étrangères, de l'environnement, des données fournies suite à une coopération internationale de projets...etc)
- v) **Aligner la gestion des connaissances sur les priorités émergentes** et qui s'apparentent intimement à l'agriculture tel le changement climatique, la sécurité alimentaire, la conservation de l'environnement et la gestion des ressources naturelles.
- vi) **Impliquer les agriculteurs à l'échelle de la chaîne entière de la gestion des connaissances** : à travers la reconnaissance du rôle des agriculteurs non seulement comme des consommateurs mais aussi comme des producteurs de connaissance.
- vii) **Eviter la fixation sur une seule catégorie de médias** (surtout les médias sociaux et la technologie de l'information de la communication TIC) : l'utilisation/ utilisateur doit déterminer quel type de média doit être utilisé afin de transmettre le message.

- viii) ***Reconnaitre la diversité au sein de groupes d'agriculteurs*** (agricultrices, paysans, agriculteurs de subsistance et jeunes agriculteurs) : Toute stratégie de la gestion des connaissances doit assurer la justice vice-à-vice ces groupes

La pertinence de KariaNet est fortement soutenue par ces neuf études comme étant l'unique réseau régional de son genre pour la gestion et le partage des connaissances en agriculture et en développement rural. Ce rôle reste cependant complémentaire aux stratégies nationales de gestion des connaissances, en cas de leur existence. Il serait aussi pertinent de catalyser l'émergence des stratégies de gestion des connaissances dans les pays où le concept est complètement absent (tel le Soudan et le Yémen). En plus, il est fondamental de partager et apprendre des expériences d'autrui en cas de succès mais aussi en cas d'échec, et les cartographies identifient des expériences nationales substantives capables d'être utilisés comme point de départ du processus. Enfin, la combinaison d'une participation nationale positive d'une part et la fédération des efforts des différents intervenants d'autre part jouera un rôle majeur dans la réalisation des objectifs principaux de KariaNet.

1. Introduction

This report summarizes, synthesizes and compares the nine “knowledge mapping studies” that were produced between September 2011 and April 2012 for all countries participating in KariaNet¹. The studies were commissioned towards the beginning of the second phase of KariaNet² to give a scan of the real picture of the status of KM-KS in each of the countries participating in the programme, as well as compilation of a database of experts and policies related to KS-KM. The present report can be considered hence as a comparative aggregation of these scans, and is structured along three main themes:

- i) Who is doing what in KM/KS at the country level (institutional key players and main strategic orientations)
- ii) A brief description of the relevant KM/KS strategies that are currently in place or in the immediate pipeline
- iii) A clustering of the recommendations provided by each national report with regards to improving KM/KS

It is important to note that this report provides only a horizontal comparison and is by no means a substitution to the initial studies which explore in much more depth and details the KM/KS situation in individual countries.

2. General trends

A first analytical synthesis of the country reports was provided in the study for the devolution of KariaNet³ and reached the following conclusions

- 1- Information management and extension are the two pillars for KM-KS in the region
- 2- There is limited expertise and competencies in KM-KS in the region
- 3- There is a growing interest for KM-KS and buy-in at the national level.

¹ With the notable exception of Syria where geo-political conditions did not allow to conduct the knowledge mapping assessment

² KariaNet I (2005-2008) worked with 10 IFAD funded projects in 5 countries and was managed jointly by IDRC and IFAD. The current phase KariaNet II (2010-2013) works over the entire MENA countries and has as “main clients” the IFAD and IDRC funded projects in the region. A third phase is currently in the pipeline and has been devolved to the Environment and Sustainable Development Unit (ESDU) of the American University of Beirut (AUB)

³ Creech, H and Moussa, Z (2012) Devolution Study: A Regional Knowledge Network for the Near East and North Africa, International Institute for Sustainable Development IISD prepared for the KariaNet management http://karianet.org/resources_and_publications

- 4- There is a broad consensus on the need for coherence in agriculture information management and dissemination at the national level
- 5- There are limited bright spots: CRP2 (Morocco); the Jordan Centre for Agriculture Information (AGRIIS) which incorporates the National Agricultural information system (NAIS); Ministry of Agriculture with its extension and education department (Lebanon); & sector-wide approaches (“regroupements inter-professionels” and “approche filière”) with associated KS mechanisms in the Maghreb countries.

If we want to deepen this analysis further and going through the various country reports, it becomes an empirical certainty that there is a marked shift in agricultural policies from the food self-sufficiency paradigm that dictated the policies of the 80’s and the early 90’s to the wider and more inclusive paradigm of food security from the year 2000 onwards. There are also tangible proofs that governments are trying to approach agricultural policy from a broader sustainable natural resources management angle as issues such as water governance, energy efficiency and climate change are becoming more and more mainstreamed in the decision maker’s discourse.

Reading in between the lines, it is also clearly appears that social and economic stability is becoming instrumental within the evolving geo-political context in MENA following the “Arab Spring”, and it is no coincidence that the “Spring” was sparked by a young Tunisian street fruit vendor. Although there is no evidence of a substantive revision of the agricultural policies from 2011 onwards, there is at least a sense of accelerated reform and a new emerging talk about “equity” and the “professionalization” of agriculture which remains by and large a “default” choice to the poorest and the most marginalized in the absence of other choices at their disposition.

Most studies also point to a gradual disengagement from state-controlled agricultural policies towards more “democratic” decision making structures, particularly in two out of three Maghreb countries (Morocco and Tunisia) where participatory platforms such as “inter-professional bodies” and value chain approaches for key economic sectors are being put in place. On the Mashreq side, Lebanon and Palestine provide real-life examples on how the private sector and the community-based organizations can compensate the absence of a strong and omnipresent state, without necessary leading to the best results as well.

However, and from an end-user perspective, a lot remains to be done, particularly in overcoming the assumption that “farmers” are a homogenous group and that equal opportunities are available for farmers from both sexes. It is that very assumption that also affects

KM/KS in determining what information is needed and how the message is conveyed from a use/user perspective, and whether a web-based tool that might look optimal from a researcher's point of view is equally optimal from the point of view of the farmer.

There is also a lack of critical review of past experiences and “learning from failure” in the studies of all countries without exception, which show a tendency to over-simplify the endemic problems of the agricultural sector into the lack of an adequate organizational structure for the research and extension services, while the reality-check tells that the best strategy and the most suitable organizational framework would remain totally useless if the extension services are under-qualified or under-staffed (figures such as 1 agent for 3,800 farmers appear in the Morocco study), or if they simply have no cars or motorcycles to reach for the farmers (like in Jordan). An equally over-simplistic solution would be to assume that making the material available online or sending key messages by sms would resolve the problems that these farmers are facing, and where “good old solutions” like a dedicated TV program – which are totally overshadowed in the studies – might be more efficient and effective.

3. Main Players and Key Strategic Orientations of KM/KS

The broad KM/KS stakeholder organization in the 9 countries under study are provided in Table 1 below. It confirms that governments are to a large extent the main key players in the field, with the notable exception of Lebanon and Palestine and which can be attributed to the weakness of the central governments that led to the emergence of a relatively strong NGO/private sector presence. Networking remains limited and mostly donor-driven, and the private sector is virtually absent and left to pursue an agenda of its own, though Maghreb countries are increasingly making room for the private sector through sectoral value-chain approaches. Trade unions and farmer organizations are also almost totally absent from the picture, although they are supposed to be the main “users” of knowledge.

Generally speaking, we can say that things are moving in the right direction in Algeria with regards to KM/KS, but a lot of efforts are needed to put in place a convincing mechanism for sharing and exchange and to reduce the compartmentalization of knowledge on one hand, and to maximize the benefits from Algeria's new emphasis on R&D results on the other. Egypt is confirmed as a reservoir of agricultural knowledge and has a significant repository of this knowledge, yet the “real” work starts upon the retrieval and utilization of this knowledge, while it currently stops once knowledge is generated and stored (the “stamped and sealed” approach” mentioned in the study)

There seem to be currently a new re-thinking of the Jordan research and extension system which strives to align the way agricultural information is produced and shared with the recommendations of Jordan's national food security strategy, as well as the recent reforms in the water governance sector. The re-thinking is also geared towards a greater participation and inclusion of the private sector and the NGOs in the oversight and decision-making structures. In Lebanon, the multi-actor model is worth further investigation as the small size of the country makes it an ideal showcase/pilot on how the liberalization of the agricultural sector with its multiple layers of complexity would affect the agricultural sector in general and the KM/KS process in particular. This acquires additional relevance in the light of the recent orientation of larger MENA countries for less state-interventionism and more liberalization in the agricultural sector.

The mapping studies also provide interesting entry points on how other countries, and more particularly the Mashreq ones could learn and get inspired from the multi-stakeholder models that are actually in place in Morocco, and the efforts to decentralize the planning by bringing it closer to the "local development" paradigm and the territorial approaches to development. The Palestine model described in the study is quite comparable to the Lebanon case, as both countries suffer from an endemic weakness of the central state. The added value in the Palestine case is how to deal/adapt/react to the quasi-absence of resources (land under occupation, confiscated water resources, restrictions of free trade only to name a few) and still develop models for achieving food and water security.

With 13% of the GDP and 16% of the workforce, the development of the agricultural sector is a strategic choice for Tunisia, and that a gradual disengagement of the state and an in-depth revisiting of the extension approaches is currently in place with a view to decentralize decision-making and involve more organically all key stakeholders through public/private partnerships that are also open to civil society and local authorities. The agriculture observatory and more particularly the Techno-Pole approach and how knowledge is generated, shared and used might present interesting entry points for further investigation. In Sudan and Yemen, it clearly appears that there is a need to introduce and mainstream the concept of KM/KS in order to capture the tacit knowledge, while improving the efficiency of extension and reducing duplication.

Country	Table 1: Main Players and Key Strategic Orientations of KM/KS in the MENA countries under study
Algeria	<p>Algeria – like other Maghreb countries formerly under the French Mandate – has a well established but heavily centralized KM/KS system coordinated by the Ministry of Agriculture and Rural Development (MADR) through its National System of Agricultural Research (SNRA). It includes – but not restricted to – academic and research teams (ENSA, INRAA, CREAD), Institutions of applied research (INPV, INMV, INSID and NCCC), Research centers (CRSTRA, CRB, CRASC, CERIST and CDER) as well as universities and their laboratories of applied research... A special agency caught our attention for its potential KM/KS role which is the National Agency for the Valorization of Research Results and Technological Development (ANVREDET), which translates Algeria’s recent orientation on making of R&D a key national priority for economic development and disseminating these R&D results.</p> <p>The national agricultural policy in Algeria is defined through three successive strategies: the National Plan for Agricultural and Rural Development (PNDAR) launched in 2000, the National Strategy for Rural Development (SNDR) launched in 2003 and more recently the Policy for Agricultural and Rural Renewal (Politique de Renouveau Agricole et Rurale – PRAR in French) which has been in place since 2008. It is also interesting to note that “Agriculture and Food Security” is considered the highest priority within the 38 themes of Algeria’s National Research Program (2,500+ action-research projects financed by the program in 2010).</p> <p><i>The study suggests that things are moving in the right direction in Algeria with regards to KM/KS, but a lot of efforts are needed to put in place a convincing mechanism for sharing and exchange and to reduce the compartmentalization of knowledge on one hand, and to maximize the benefits from the R&D results on the other.</i></p>
Egypt	<p>Egypt can be very well considered as the most advanced MENA country in terms of KM/KS with a complex web of governmental agencies and centers, as well as public and internationally funded initiatives. The strong governmental presence can be felt through the various specialized bodies under the Ministry of Agriculture and Land Reclamation, starting with the Agricultural Research Center (ARC), and the Central Administration for Agricultural Extension Services (CAAES), to more specialized departments and/or research institutes that are either multi-disciplinary like the Central Laboratory for Agricultural Experts Systems (CLAES), the Agricultural Extension and Rural Development Research Institute (AERDRI) and the Desert Research Center (DRC) or focusing on a specific sector or crop like the Horticulture Research Institute (HRI), the Cotton Research Institute (CRI) and 100+ others that are either present in Cairo or deconcentrated across the Egyptian territory.</p> <p>Trade Unions also appear to have some kind of (shy) presence in exchanging knowledge about specific products most notably those geared towards export (organic produce, essential oils, medicinal and aromatic plants, ...), and a multitude of regional and</p>

international organizations have initiated or supported KM/KS programs, most notably FAO (who has its regional headquarters in the country). This has led to a significant Egyptian experience in ICT4D applications for KM/KS, and the development of some applications for agricultural knowledge management which are unique of their kind in MENA. These include the Virtual Extension and Research Communication Network (VERCON) and an ICT-based National Agriculture Research Management Information System (NARMIS). Both were followed by community-driven initiatives such as the Rural and Agricultural Communication Network (RADCON) and the KENANAONLINE Arabic portal which seems to be the most convincing and lively platform for exchange that we encountered during the review and aggregation process of the knowledge mapping studies.

The study confirms that Egypt is a reservoir of agricultural knowledge and has a significant repository of this knowledge, and concludes that the “real” work starts upon the retrieval and utilization of this knowledge, while it currently stops once knowledge is generated and stored (the “stamped and sealed” approach” mentioned in the study)

The main player in Jordan is the Ministry of Agriculture (MOA) through the National Centre for Agricultural Research and Technology Extension (NCARE) and in coordination with other line Ministries (Water & Irrigation, Information & Communication, etc...). as well as specialized bodies such as the Jordan Valley Authority.

National Jordanian universities are also active in research (Jordan University, Jordan University for Science and Technology- JUST, Balqa Applied University, ...) and some Foundations working under a humanitarian or poverty-reduction mandate also support agriculture (Noor AL-Hussein Foundation, Jordan River Foundation, Jordanian Hashemite Fund for Human Development, Jordanian National Forum for Women (JNFW), etc...).

A significant interface exists between water management and agriculture since Jordan is one of the 10 water poorest countries in the world and since conflict over water resources is an aggravating factor of the (already fragile) geo-political situation. USAID in particular supports a multitude of projects on water management and agriculture, such as the KAFA'A project.

Jordan developed in 2005 a National Agricultural Information System (NAIS) with the assistance of FAO, and one of its outcomes was the restructuring of the governmental extension services to improve efficiency and reduce overlap in mandates. Another outcome was the creation of a National Center for Agricultural Research and Technology Transfer (NCARTT) with a mandate to boost applied agricultural research in Jordan, disseminate technologies to farmers and strengthen the capacities and skills of researchers and extension staff.

The study highlights that there is currently a new re-thinking of the Jordanian research and extension system which strives to align the way agricultural information is produced and shared with the recommendations of Jordan's national food security strategy, as

well as the recent reforms in the water governance sector. The re-thinking is also geared towards a greater participation and inclusion of the private sector and the NGOs in the oversight and decision-making structures.

Lebanon

The presence of multiple sources of extension, technology transfer and agricultural and rural development advisory services in Lebanon makes the KM/KS landscape in the country rather unique with a mix of public and private sector entities, as well as various national and international NGOs.

On the governmental side, we find the Ministry of Agriculture through its various departments, most notably extension and research, as well as two affiliated bodies: the “Green Plan” which is an autonomous body providing land reclamation, irrigation systems and agricultural road construction on subsidy basis as well as the Lebanese Agricultural Research Institute (LARI) which holds the national R&D mandate. The “Council for Development and Reconstruction – CDR” is another potential key player as it centralizes most of Lebanon’s development cooperation.

The 4 Chambers of Commerce, Industry and Agriculture of the country provide a small but consequent KM/KS interface with the private sector, most notably agro-processing and exporters of agricultural produce. A good dozen of NGOs play a significant role in agricultural development and subsequently KM/KS (Arcenciel, Association for the Development of Rural Capacities – ADR, Jihad al Binaa Foundation, Rene Mouawad Foundation, Association for Forest Development and conservation - AFDC to name few). Several international NGOs working mainly with USAID funding are also active on the agricultural development scene (Mercy Corps, World Relief Foundation-WRF, ACDI/VOCA, YMCA,) as well as the Italian cooperation through ICU. Last but not least, the aggressive sales strategies followed by the agricultural supply companies (Debbane Freres, Robinson Group, UNIFERT, etc...) makes it that at the end of the day, the most likely (and often biased) source of information that will make its way to the farmer is the one provided by the sales agents of these companies. Most of these companies will even provide seeds, fertilizers and pesticides on (high-interest) credit basis to the farmers and get their money back during the harvesting season.

Our summative conclusion from the results of the study indicate that the Lebanese multi-actor model is worth further investigation as the small size of the country makes it an ideal showcase/pilot on how the liberalization of the agricultural sector with its multiple layers of complexity would affect the agricultural sector in general and the KM/KS process in particular. This acquires additional relevance in the light of the recent orientation of larger MENA countries for less state-interventionism and more liberalization in the agricultural sector.

In Morocco, the Ministry of Agriculture and Fisheries, through the National Institute of Agricultural Research with its 40 directorates, 9 regional offices for agricultural development and 122 Agricultural Centers is by far the major player in KM/KS

Morocco	<p>The Moroccan experience is quite interesting because it tries to engage all key players in the decision making process (groupements inter-professionnels in French which can be translated as inter-professional clusters) and because it applies a value chain approach to the problem diagnosis and solving (approche filière). As such we find multi-stakeholder bodies working on a specific crop or sector, like for example the National Inter-professional Office for Cereals and leguminous plants (ONICL), and similar bodies for fisheries, milk, poultry, argan, honey, etc...</p> <p>Another special feature of the Moroccan experience is the strong linkages with local authorities (Collectivités locales et territoriales), which makes possible the decentralization and the “localization” of knowledge through local-level mainstreaming. Even NGOs can find their place and participate in the process through special mixed structures like common economic interest groups (Groupements d’Intérêt Economique).</p> <p>Taking into consideration the important role that agriculture play is the Moroccan economy (15% of the GDP plus an additional 4% for agricultural processing and manufacturing), structures advocating for farmers interests are also present and associated to the decision making process (Agro-tech, Federation of Agro-Industry, Federation of Chambers of Agriculture, Networks of Associations and NGO collectives, Inter-professional Federations of key production sectors, etc...)</p> <p><i>The study provides interesting entry points on how other countries, and more particularly the Mashreq ones could learn and get inspired from the multi-stakeholder models that are actually in place in Morocco, and the efforts to decentralize the planning by bringing it closer to the “local development” paradigm and the territorial approaches to development.</i> The KariaNet “Learning Route” planned to take place in Morocco in March 2013 is a good step in that direction.</p>
Palestine	<p>In Palestine, and due to the fact that governmental services are quite recent, there is a marked presence of the civil society in agricultural extension and development, in addition to the governmental channels.</p> <p>On the governmental side the key players are the National Agricultural Research Centre (NARC) and the Palestinian Water Authority (PWA). They are supported by a multitude of international donors such as FAO, WFP, UNDP, ILO, UNDP and others, as well as international NGOs working with European or US funding such as American Near East Refugee Aid (ANERA), OXFAM, CHF, ACDI/VOCA, LAND O’LAKES, World Vision and many others</p> <p>There is also a strong “indigenous” presence of Palestinian NGOs with an agricultural vocation and research centers working in Agriculture such as the Palestinian Agricultural Relief Committee (PARC), the Palestinian Hydrology Group, the Arab Center for Agricultural Development (ACAD), the Applied Research Institute in Jerusalem – ARIJ and many others.</p> <p>The knowledge mapping report indentifies a interesting best practice in Palestine which is the sectoral working groups (agriculture,</p>

food security, environment, water and wastewater in addition to a working group on cooperatives which is in the process of formation)

The Palestinian model described in the study is quite comparable to the Lebanon case, as both countries suffer from an endemic weakness of the central state. The added value in the Palestine case is how to deal/adapt/react to the quasi-absence of resources (land under occupation, confiscated water resources, restrictions of free trade only to name a few) and still develop models for achieving food and water security.

Tunisia

Tunisia has a web of governmental agencies in charge of KM/KS attached to the Ministry of Agriculture through its Training and Agricultural Extension agency (L'Agence de formation et de vulgarisation agricole - AVFA). Research is mostly under the Institution of Research and Higher Education in agriculture (IRESA) who also manages 5 research centers scattered across the most important agro-ecological zones of the country. IRESA also supervises 6 multi-disciplinary research institutes who are quite active in knowledge generation such as the National Institute for Agronomic Research (INRAT), the Institute of Rural Engineering, Water and Forests (INGREF) or the National Institute for the Sciences and Technologies of the Sea INSTM. The Agency for the promotion of Agricultural Investments (APIA) provides financial and technical support to young entrepreneurs who are starting an agricultural SME and shares de facto available knowledge on what works and what does not.

Much like Morocco, the Tunisian experience puts a lot of emphasis on multi-stakeholder dialogue structures (structures de concertation in French) and aggregation of experiences. The Tunisian Union for Agriculture and Fisheries (UTAP) is the major professional platform for farmers and represents their best interests in most consultative instances that are dealing with agricultural legislation. UTAP has 21 producer federations that are regional, thematic or a mix of both including one for young agriculturalists. The National Observatory for Agriculture created in 2000 caught our attention as its mandate explicitly mentions information management and sharing as well as the role of information as a decision support tool. Another Tunisian experience that is worth noting is the “Techno-Pole” approach that brings together a production area, an incubator of “green” businesses, a research center and one or more academic institutions.

The study suggests that with 13% of the GDP and 16% of the workforce, the development of the agricultural sector is a strategic choice for Tunisia, and that a gradual disengagement of the state and an in-depth revisiting of the extension approaches is currently in place with a view to decentralize decision-making and involve more organically all key stakeholders through public/private partnerships that are also open to civil society and local authorities. *The agriculture observatory and more particularly the Techno-Pole approach and how knowledge is generated, shared and used might present interesting entry points*

for further investigation.

Yemen	<p>The knowledge mapping study in Yemen identifies a strong predominance of governmental services in KM/KS, especially that Ministry of Agriculture is also in charge of irrigation. This is most notably done through the Agriculture Research and Extension Authority (AREA) and its various divisions and directorates, through the effectiveness of these governmental services seem questionable according to the study. Some projects with international funding, most notably the Social Fund for Development (SFD) but also the Tihama Development Authority (TDA), Al Dhala Community Resources Management Project, the Groundwater and Soil Conservation Project (GSCP) and many others are more resourceful and hence more organized, and part of their mandate/intervention encompasses agriculture and extends hence to KM/KS. The Faculties of agriculture in the public universities seem to be conducting research that could lead to “indigenous” KM/KS which remains by and large a “tacit” process. A special feature of Yemen is the multitude of written material and TV programs addressed to farmers.</p> <p><i>The study stresses the importance of introducing and mainstreaming the concept of KM/KS in order to capture the tacit knowledge, while improving the efficiency of extension and reducing duplication.</i></p>
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4. KM/KS strategy in each country: short description and main elements.

The compilation of this particular part of the report proved to be more difficult, due to the strong variances in between reports regarding the level of details provided, and whether the knowledge mapping reports described the extension strategy per se or whether they tried to extract the KM/KS related aspects that are of direct interest to the work of KariaNet.

The marked feature in each of these strategies is highlighted in bold in Table 2 below and ranges from access to innovation and investing heavily in research in Algeria, to the strong focus on upgrading the IT infrastructure and giving particular emphasis on ICT4D in Egypt which in line with Egypt’s previous experiences in the field. In Jordan, it is interesting to note the linkage between access to information on one hand access to credit and broader sectoral policies on food security on the other hand, while in Lebanon the focus on building partnerships between public and private sector actors towards a decentralized and pluralistic approach in delivery of services caught our attention.

Morocco's renewed emphasis on integrated rural development where agriculture is the main economic activity and the “localization” of knowledge sharing is of particular relevance which is also in line with Tunisia's efforts to balance between the supply and the demand side for knowledge.

We warn however from a significant risk of bumping into “empty shells” upon diving into the operational details of these strategies, as highlighted in the attached image where a “National Information System” has only its main page populated, while the sections on “Research Plan achievements”, “Good Practices” or even the more basic “Annual Research Plan” remain totally blank.

As highlighted in various sections of this report, there should be some kind of effort to evaluate what works and what does not work, in order to avoid repeating mistakes, without which the design of new KM/KS systems would remain at risk. We were incited to explore further the featured “empty shell” because it appeared in one of the reports that this experience was about to be replicated in Iraq with international funding, which might backfire on Iraq's overall faith in KM/KS mechanisms.



Country	Table 2: Main Elements of the KM/KS strategy in each country
Algeria	<p>Knowledge management (KM) has its own place in the state policies of Algeria. Since the early 2000's, the agricultural sector has experienced a strong comeback of political state interventionism, although the action plan of all national policies and strategies focuses on the modernization of farming systems, increasing their production and enhancing the preservation of natural and cultural resources. The main policies launched by the Algerian government are the following:</p> <ol style="list-style-type: none"> 1. <u>The National Strategy for Rural Development</u> (2 documents: MADR 2003 and MADR 2006): where the central theme is the improvement of farmers' access to innovations as a pre-condition to development without referring explicitly to the concept of KM, although it recommends – among others - establishing interconnected databases at the local and regional levels, development of technical and commercial networks and strengthening the role of extension agents as facilitators of knowledge.

2. The Agricultural and Rural Renewal Policy (*Politique de Renouveau Agricole et Rural PRAR*) which includes a program dedicated to “The Reinforcement of Human Capacities and Technical Support” of the producers. This program anticipates the mobilization of an annual budget of 24 billion dinars during the period 2010/2014, devoted to capacity building actions such as the implementation of major development programs in various parts of the Algerian territory, rehabilitating and constructing new experimental stations and laboratories, strengthening the technical support provided by the national extension system and its territorial presence, and – most importantly in our opinion - **establishing a monitoring and evaluation system as well as a decision support system and a communication and visibility strategy**. The strategy highlights clearly that it seeks to mobilize national and academic competencies for **an effort “made in Algeria”** rather than relying on external competencies as it was the case before.

- 3. The extension strategy (2010/2014), under *The Policy of Agricultural and Rural Revival*, proposed an action plan of sharing knowledge, based on intensive yearly campaigns, thematic info-days, demonstration sites, as well as seminars, forums, series of lectures and discussion on new topics.

Egypt

In 2009, Egypt developed the “Sustainable Agricultural Development Strategy towards 2030”. The vision of this strategy is **mostly skewed towards ICT4D** and aims at achieving a comprehensive economic and social development in Egypt through achieving Food Security and improving rural livelihood. The main focus points of this strategy are:

- i) The role of communication and information technology in agricultural development;
- ii) Agricultural commodities electronic marketing and trade policy;
- iii) Agricultural information system development policy.

Furthermore, the strategy suggested a National Program in order to promote the role of communications and information technology in agricultural development through:

- iv) Establishing and developing modern networks linking the different sectors and individuals;
- v) Modernizing and developing equipment and hardware needed for raising the efficiency of agricultural information and communications systems particularly at the village level;
- vi) Ensuring the overflow of information and making information available to all the parties concerned with agricultural development”

According to the knowledge mapping report, production of knowledge in agriculture and related fields in Jordan is considerable; however the transfer of this information to small farmers and poor villagers is not enough. This is mainly due to the absence of a well-defined national policy, strategy or regulation on KM/KS. The available policies are those related to specific projects within

project funding agreements. Furthermore, there is no central unified platform to manage and disseminate, on the national level, all information related to rural enterprises and food security, although **access to information and access to finance are at the core of these strategies, in addition to water governance** which is a pressing issue in Jordan. Some strategies related to rural development have been/are being implemented and allow sharing of information on the national level:

Jordan

- The National Strategy for Agricultural Development (NSAD) (2002-2010) having the following key objectives:
 - To diversify and improve rural livelihoods by strengthening rural population's access to technology and resources;
 - To support and develop rural areas by (1) achieving sustainable agricultural development in its economic, social and environmental dimensions, (b) achieving food security and reducing poverty in rural areas, and (c) making rural financial and marketing services available to farming households.
 - To enable rural women;
 - To improve family incomes by providing facilities needed to develop skills in production and marketing;
 - To revive of the rural economy.
- The Government's Poverty Reduction Strategy, the National Water Strategy, the National Environment Strategy, and the National Strategy for Women have all a substantive agricultural interface and touch hence directly or indirectly of KM/KS
- The Country Strategy Opportunities Paper (COSOP) aiming at supporting projects in poor rural areas by improving access to market, building capacities of rural communities, improving access to land... which again leads to a KM/KS loophole.

Knowledge production in Lebanon is considered to be significant and involves many stakeholders. Number of private and public bodies shares this information at the level of farmers, while the terminology of knowledge management and sharing appears to be new to most organizations. The Strategy of the Extension Service at the Ministry of Agriculture focuses on **building partnerships between public and private sector actors towards a decentralized and pluralistic approach in delivery of services**. This would be achieved through the following orientations:

Lebanon

1. Adopting an action plan based on clear national strategies;
2. Adopting a decentralized approach for the extension system and stressing its dual technology transfer and facilitation role.
3. Improving quality of its services and gaining clients accountability;
4. Involving different institutions in rural extension delivery in order to provide more services and raise operational efficiency;
5. Improving the relation with research and source of innovations;

6. Recruiting and developing human capital needed to acquire new technique and to deliver services.

Furthermore, Lebanon is now implementing a strategic framework for agriculture and fisheries for 2010–2014 and the Ministry of Agriculture nominated some 20 national committees covering major agricultural sectors. Other projects such as ‘Strengthening Production and Marketing of Lebanese Agricultural Products’, the ‘Lebanese National Observatory for Agricultural Development’ and ‘Capacity building for a pro-poor review and making operational the agricultural development strategy’ are ongoing as well.

Morocco

The different rural development strategies developed by the Moroccan government are all **based on the principles of an integrated rural development where agriculture is the main economic activity**. The national plan for food security is based on a national strategy aimed at sharing knowledge and good agricultural practices and making them available to the farmers;

The Green Plan Morocco (2009) is a major milestone for the strategic planning of the Moroccan Agriculture. It relies on 7 main pillars, the most important of which is making agriculture a principal leverage for economic growth during the next 10 to 15 years, including the creation of 600,000 jobs in the sector and with a strong focus on exporting products where Morocco is particularly competitive and adopting an “aggregation” model through the creation of win-win partnerships between the upstream of production and the downstream of the commercial and/or industrial phase. It also stresses equity-based approach to agricultural development and introduces principles of conservation and mainstreaming. Surprisingly, **none of the strategic orientations of the Plan encompasses explicitly KM/KS**, but the creation of the National Agricultural Council in 2011 as public institution with legal personality and financial autonomy can be considered as a step in the right direction.

The New Strategy of Agricultural Extension adopted by the council foresees the following strategic objectives: i) provide farmers with innovations of high impact on their income ii) orient the national R&D policy towards meeting the needs of the farmers and iii) prioritize funding according to the needs. Furthermore the strategy foresees the restructuring the research and extension centers and developing **a comprehensive knowledge management framework** that meets the farmers’ expectations, and facilitate the access of farmers to finance and private service advisory.

The Ministry of Agriculture of the Palestinian National Authority developed in 2011 a draft for the Action Plan of the National Agricultural Strategy (2011-2013) with the technical support of the FAO. The action plan identifies a seven-fold strategy:

1. Promoting farmers’ perseverance, attachment to their land and anchoring them in their profession
2. Managing agricultural resources throughout the Palestinian territory in an effective and sustainable way;
3. Creating a proper institutional and legal framework for the agricultural sector as well as training and selecting a qualified personnel that will help to end the occupation and establish the State;

<p>Palestine</p>	<ol style="list-style-type: none"> 4. Improving the productivity of both plant and livestock subsectors and their contribution towards food security; 5. Developing appropriate agricultural infrastructure and services; 6. Improving the ability of Palestinian agricultural products to compete in local and international markets; 7. Enhancing the agricultural sector's operational capacity to help achieve the requirements of state-building. <p>Moreover, a set of policies have been detailed, which are closely interlinked to knowledge management and sharing and aim at reviewing the roles and tasks assigned to the agricultural sector's institutions through:</p> <ul style="list-style-type: none"> - Developing subsector and subject matter strategies; - Developing institutions and activating cooperation between agricultural institutions; - Developing agricultural database and information.
<p>Tunisia</p>	<p>The Ministry of Agriculture and Environment has elaborated various sectoral strategies covering different areas including training and extension. The report mentions 5 plans/strategies (five-year) that have been conducted between 2007 and 2011:</p> <ol style="list-style-type: none"> 1. "National strategy of adaptation of the Tunisian agriculture and ecosystems to climate change" (GIZ, 2007) based on two fundamentals: a policy to mitigate greenhouse gas emission and a policy of adaptation to changes in resource availability to face the impacts of climate change in the best way. 2. "Analysis of the agricultural policy" (WB, 2006) which draws the profile of the agricultural sector in Tunisia, going through the past achievements and setting a starting point for a the way forward through decentralization of services and gradual disengagement of the state from the delivery of services while keeping a planning and an oversight role. 3. "Actualisation concertée de la politique agricole" (AFD, 2010) defining new directions for the agricultural policy adapted to the newly emerging requirements and constraints ; 4. "Study on food security" (FAO, 2011) which showed that although Tunisia has managed to achieve self-sufficiency in white meat, eggs and dairy products it still suffers from a high dependency on cereal exportation. To address the shortcomings, the study suggested three investment programs in cereal and forage crops during the period 2011-2030. 5. "Study on the organizational audit of regional commissaries of agricultural development" (CNEA, 2009-11) to push forward the decentralization agenda. <p>More recently, a National Strategy for Sustainable Development was developed (2011) and focuses on the upgrading of environmental standards and practices in various economic sectors including agriculture by working on both the demand and the</p>

	supply sides.
Sudan	<p>Sudan has accumulated experiences and knowledge in the area of food security, poverty alleviation and rural enterprise development. Unfortunately, due to lack of communication and knowledge exchange, this information remains marginal. Since 2003, and in order to build an ICT driven nation and a knowledge-oriented society, the Sudanese government created 4 institutions to manage information. The national strategy is based on institutional and legal frame work, capacity building and human resource enhancement, infrastructure development, scientific research Promotion, and funding sources, and highlights particularly a more prominent role for the private sector in the field of agricultural communication (creation and dissemination of information and communication centers and establishment of the e-libraries). The high penetration of mobile telephony makes it a privileged medium in KM/KS</p>
Yemen	<p>The concept of KM/KS is new in Yemen. In 2011, the Yemeni Ministry of Agriculture and Irrigation (MAI) elaborated an action plan (2011-2015), in partnership with the UNDP through the Economic Diversification Support Program (EDSP), in order to improve agriculture in the country. The National Agriculture Sector Strategy (NASS) includes an Implementation Plan (NASS-IP) for 5 years 2012-2016, and is intended to support multi-sectoral initiatives in the areas of food security, climate change, and poverty reduction. The success of the NASS is closely linked to the implementation of the National Water Sector Strategy Program's Implementation Plan (NWSSP-IP) and depends mainly on the support of the Yemeni government and the international community. It aims at achieving the following key objectives:</p> <ul style="list-style-type: none"> - Increasing the agricultural production to attain high levels of the food security that rely on domestic agricultural food; - Supporting the efforts to combat poverty in the rural community; - Preservation of environment and natural resources. <p>The NASS focuses on the importance of extension_services and extension research as a pillar in the development of all subsectors of agriculture. It states that agricultural extension in Yemen is not functioning well due to lack of resources and that it needs to be revitalized and updated on technical knowledge regarding current agronomic, business, or management techniques.</p>

5. Recommendations provided by each report to improve KM/KS at the country level

The final section of this report is dedicated to the recommendations provided by the authors of the knowledge mapping reports on how to improve KM/KS in their respective countries. The common threads between these recommendations can be clustered into the following:

- 5.1 Developing national strategies for KM/KS:** taking into consideration the omnipresent role of the state, it is very important to advocate for a clear KM/KS strategy that should be a transversal cross-cutting theme to all planned reforms
- 5.2 Investing in champions:** advocacy for KM/KS and the operationalization of any KM/KS strategy would need skilled local champions. While KariaNet can distill the message regionally, only local champions can move things at the country level and hence strengthen the broader regional momentum
- 5.3 Addressing the segmentation between research and extension by making it use/user driven:** This would entail that both the R&D sector and the extension sector will have to move beyond their “comfort zone” and embrace the multiple views of the users and develop out-of-the-box solutions that can be used (and not just published and archived)
- 5.4 Addressing the fragmentation of knowledge sources,** mainly by creating national repositories (such as agriculture observatories) that can have undistracted access to all data pertinent to agriculture (departments of statistics, other ministries such as water and irrigation, social affairs, environment, data produced by international cooperation projects etc...)
- 5.5 Mainstreaming agricultural KM/KS with emerging priorities** that are organically related to agriculture such as climate change, food security, environmental conservation and natural resources management.
- 5.6 Involving farmers across the entire KM/KS chain** by acknowledging their role not only as consumers but also as producers of knowledge.
- 5.7 Avoiding the fixation on only one category of media** (mainly social media and ICT) as the use/users should determine what type of media should be used to convey the message.
- 5.8 Acknowledge diversity within farmer groups** (women farmers, landless farmers, subsistence farmers, young farmers) and ensure that any KM/KS strategy ensures equity vis-à-vis these groups.

Country	Table 3: Recommendations Provided by the Knowledge Mapping Reports on how to Improve KM/KS at the country level
	The knowledge mapping report proposes three strategic axis to improve and mainstream KM/KS centered on innovation and sector-

Algeria	<p>specific approaches:</p> <ol style="list-style-type: none"> 1. Encouraging innovation in agriculture by analyzing technical and institutional constraints that hinder innovation for an improved agricultural productivity 2. Developing a governmental strategy for the production, sharing and use of knowledge for innovation in agriculture and; 3. Shifting from a “diffusion” approach based on the segmentation research/development/extension to an innovation system approach in which the innovation is the result of interactions between numerous actors (researchers, farmers, entrepreneurs, private and public enterprises, policy makers...)
Egypt	<p>The knowledge mapping study acknowledges that KM/KS network(s) exist and that there is a significant flow of information that is already present. Any proposed strategy should hence address the processing/utilization of knowledge as KM/KS seems to be stuck in a storage/retrieval dichotomy along a “signed and stamped” (and then “put to file”) approach. The study proposes the following:</p> <ol style="list-style-type: none"> 1. Align efforts with the “Sustainable Agricultural Development Strategy towards 2030” (drafted in 2009) and which suggests – among others – to establish a special unit for the administration of the agricultural information network at the Ministry of Agriculture and Land Reclamation 2. Favor the emergence of KM/KS champions among the pool of existing practitioners by developing their KM/KS skills 3. Developing and implementing a program for supporting information infrastructure 4. Establish databases for supporting the strategic objectives and to facilitate monitoring and evaluation (the only study where M&E is mentioned explicitly)
Jordan	<p>The knowledge mapping study emphasizes the importance of the following strategic directions geared towards a better alignment on the food security and water governance efforts.</p> <ol style="list-style-type: none"> 1. Aligning KM/KS with the food security and water management strategies of Jordan and link it to KariaNet II as well as existing national and regional networks with a similar mandate. This is best done through synergies with the existing National Agriculture Information System (NAIS) 2. Develop the capacity of the current staff of organizations involved in rural development and food security on information management and increase the awareness of “information generators” on the importance of information sharing and dissemination; 3. Develop complementarities between individuals’ tacit and organizations’ explicit knowledge sharing on food security and

	<p>small enterprises to enable the translation of the compound knowledge into improved practices;</p> <ol style="list-style-type: none"> 4. Encourage more effective involvement of farmers (male and female) and local communities through participatory documentation approaches that enable the translation of individual knowledge, experience and successes into improved practices; 5. Support the different stakeholders in result-based planning, budgeting and management in order to improving their capture of process results and costing.
Lebanon	<p>The Lebanon knowledge mapping study stress the importance of coordination and exchange between the various stakeholders responsible of knowledge generation (Ministry, research centers, universities, private companies, national/international NGOs and farmer cooperatives) in an integrated and sector-wide approach. It leads to the following strategic axis:</p> <ol style="list-style-type: none"> 1. Establishing a supportive national KS/KMlearning infrastructure that brings together all concerned stakeholders 2. Adopt new and innovative knowledge sharing and dissemination approaches instead of relying solely on the traditional extension teaching methods; 3. Assign a dedicated (and preferably collective) leadership platform to oversee this effort and which can be very well a national KariaNet chapter. This platform should work on raising awareness around KM and explore specific infrastructural and capacities needed to create a knowledge sharing culture.
Morocco	<p>The knowledge mapping study for Morocco suggests stresses the importance of a collaborative effort for raising the profile of KM/KS in partnership with the newly established “Office National du Conseil Agricole”. It proposes the following recommendations:</p> <ol style="list-style-type: none"> 1. Develop a national strategy for sharing knowledge by integrating all partners: Research, training, development workers, NGOs, financing structures. This strategy should define WHO shares WHAT and especially HOW TO SHARE knowledge; 2. Capitalize the successful experiences in knowledge sharing and encourage replication in other areas. 3. Implement different and innovative modes of information dissemination to facilitate the access to agricultural knowledge (websites, call centers, farmers field schools, agricultural programs through the media: tv and radio, events...
	<p>The knowledge mapping study for Palestine proposed the following recommendations aimed at introducing and mainstreaming KM/KS as efforts seem to be starting from scratch:</p> <ol style="list-style-type: none"> 1. Enhance knowledge management mechanisms and systems;

Palestine	<ol style="list-style-type: none"> 2. Knowledge harvesting of tacit forms of knowledge in food security and rural enterprise development; 3. Support the dissemination of knowledge and improve its outreach to farmers and rural enterprises; 4. Establish sustainable funding mechanism 5. Enhance capacities in knowledge production and management.
Sudan	<p>The recommendations of the Sudan knowledge mapping study are based on an extensive questionnaire and which led to the following suggestions</p> <ol style="list-style-type: none"> 1. Improve coordination between donors, local actors and government; 2. Create national, regional and sub-regional forums; 3. Establish a mechanism for close collaboration between technical personnel and decision makers; 4. Improve the organization of training on Internet and websites at national level; 5. Enhance local interconnectivity; 6. Establish national data; 7. Establish regional and sub-regional backbones; 8. Work more on collecting, organizing and publishing local information and making it available on the network; 9. Enhance the role of the electronic media (radio and television) institutions to have access to communication and computing technologies; 10. Enhance research Language interfaces and forums in multiple languages.
	<p>The Tunisia study recommends more mainstreaming between the available knowledge sources and is one of the rare studies that puts emphasis on the role of the farmers and their associations</p> <ol style="list-style-type: none"> 1. Strengthen the collaboration between relevant ministries improve the use of existing information, and analyze available data more efficiently in order to build consensus on issues related to agricultural policy and employment; 2. Use local “champions” and expertise in defining this process and ensure to provide the necessary training and supervision; 3. Stimulate the technical centers to ensure a more consistent role in the production and dissemination of information in the areas of Food Security and the promotion of rural enterprises; 4. Enhance the role of the extension services and improve their functionality in order to improve the transmission of knowledge and reach out to all farmers;

Tunisia	<ol style="list-style-type: none"> 5. Make more effort in organizing the cooperation between local and regional structures that responsible for planning and development to improve the level of information of these structures and provide better access to various services that meet their needs; 6. Empower the role of rural women by integrating them further in development projects; 7. Promote for rural enterprises to create more jobs in the agricultural sector especially for young people; 8. Encourage farmers to organize themselves in professional structures in order to reinforce their capacities, solve common problems and better negotiate their interests; 9. Develop partnerships between groups of farmers and providers of agricultural services to support and train farmers by co-extension activities.
Yemen	<ol style="list-style-type: none"> 1. Enhance the KM/KS system in the country by strengthening the capacity building of extension; 2. Strengthen the linkages between the farmers' organizations, markets, and other related organizations; 3. Provide training sessions to the staff in areas of knowledge management and sharing systems and promoting a supportive knowledge sharing and learning culture; 4. Develop approaches to facilitate and ensure smooth and cost-effective flow of data to information to knowledge; 5. Connect the following areas with knowledge management and sharing system: research and extension activities; agricultural production and processing; agricultural marketing; natural resource management and monitoring and rural development and community action. 6. Build partnership with regional and international organizations system such as, agriculture institute of Egypt, UAE, and Sudan, IFAD and FAO in order to support developing and applying knowledge management and sharing system; 7. Organize national workshops and events to bring culture change in behavior of all organizations across the country; 8. Provide and equip the agriculture organizations with more knowledge management and sharing infrastructure; 9. Establish a national network to be responsible for connecting agricultural organizations within the country and creating knowledge and sharing management system and partnership.

6. Conclusions

The knowledge mapping studies produced for nine of the 10 countries participating in KariaNet confirm the overall relevance of the programme as the only regional network for the management and sharing of knowledge, information and experience in agriculture and rural development in the Middle East and North Africa region.

Despite showing that MK/KS is still rather nascent in MENA, this report highlights several promising entry points that can be used as basis for the work of KariaNet in the future:

- 6.1 On one hand, there is a need for a collective coordinated effort to mainstream KM/KS in countries currently undergoing organic reforms within their agricultural sector (Algeria, Morocco and Tunisia, and to a lesser extent Lebanon, Jordan and Palestine) and to introduce the KM/KS concept in countries with substantive “tacit” knowledge such as Yemen and Sudan.
- 6.2 On the other hand, there are significant opportunities for cross-fertilization and mutual learning, particularly along a Maghreb-Mashreq axis where Maghreb countries seem to have managed to put in place collective systems for multi-stakeholder action planning and policy design and which can greatly benefit the Mashreq countries that are struggling to find suitable mechanisms for stakeholder integration.
- 6.3 The learning can be reciprocated along a Mashreq-Maghreb axis where Mashreq countries and particularly Jordan are working towards a closer mainstreaming of agriculture with policies related to food security, water management and climate change. Lebanon and Palestine are also well advanced with respect to the role that the private sector and the civil society organizations are playing in agricultural development and could enlighten the endeavors of the Maghreb countries.
- 6.4 Taking into consideration the complexity and the magnitude of the problems faced by the agricultural sector, we suggest that KariaNet follows an appreciative approach that looks for “solutions” (success stories, best moments, working models) rather than starting from the endemic problems of the agricultural sector as an entry point.
- 6.5 Another possible entry point would be to promote evaluative thinking and learning from experience, which was found to be largely missing across the various knowledge mapping studies.
- 6.6 “Putting farmers at the center” would also be one very important entry point, since the studies demonstrate that farmers are quasi-absent from existing structures, although these structures are supposed to be at their service.
- 6.7 It must be also clear that KariaNet cannot have a one-size-fits-all regional solution, and without knowledgeable and proactive national relays, the effort of KariaNet would remain diluted in the broad regional sphere.